

What is claimed is:

1. A deep hole cutter comprising:

a tool shank including a front connecting part at the  
5 front end thereof;

the tool shank having a coolant supply passage formed  
longitudinally therein;

the tool shank further having a first outer discharge  
groove formed longitudinally thereof, the first discharge  
10 groove V-shaped in radial section; and

a cutting head including a rear connecting part at the  
rear end thereof for coaxial and detachable connection with  
the front connecting part of the tool shank;

the cutting head having a coolant supply bore formed  
15 therein, the supply bore communicating with the supply  
passage when the cutting head is connected to the tool  
shank;

the cutting head further having a second outer  
discharge groove V-shaped in radial section, the second  
20 discharge groove aligned linearly with the first discharge  
groove when the cutting head is connected to the tool shank;

the cutting head further having a discharge port  
formed in the front end thereof substantially diametrically  
opposite the second discharge groove, the discharge port  
25 opening in the peripheral surface of the cutting head;

the cutting head further having a bypass passage formed therein between the discharge port and the second discharge groove;

the cutting head further having a plurality of cutting edges formed on the front end thereof, at least one of the cutting edges facing the second discharge groove, at least one other of the cutting edges facing the discharge port;

the cutting head further having a first outlet port and a second outlet port both formed in the front end thereof and each positioned substantially diametrically opposite the other, the outlet ports communicating with the supply bore.

2. A deep hole cutter as claimed in Claim 1, wherein the first and second outlet ports are adjacent to the leading sides of the second discharge groove and the discharge port, respectively, the cutting head having a first coolant guide recess and a second coolant guide recess both formed in the front end thereof;

the first guide recess extending between the front end of the second discharge groove and the first outlet port;

the second guide recess extending between the discharge port and the second outlet port.

3. A deep hole cutter as claimed in Claim 1 or 2, wherein the cutting edges are:

a central cutting edge adjacent to the second  
discharge groove;

a peripheral cutting edge adjacent to the second  
discharge groove; and

5 an intermediate cutting edge adjacent to the discharge  
port.

4. A deep hole cutter as claimed in any one of Claims 1 -  
3, wherein the tool shank comprises:

10 a shank body including a driver that can be rotated and  
a front connecting part at the front end thereof; and

a connecting shaft including a rear connecting part at  
the rear end thereof for coaxial and detachable connection  
with the front connecting part of the shank body and a front  
15 connecting part at the front end thereof for coaxial and  
detachable connection with the rear connecting part of the  
cutting head.

5. A deep hole cutter as claimed in Claim 4, wherein the  
20 front connecting parts of the shank body and the connecting  
shaft are identical in size and shape, and wherein the rear  
connecting parts of the connecting shaft and the cutting  
head are identical in size and shape.

25 6. A deep hole cutter as claimed in any one of Claims 1 -

5, wherein the front and rear connecting parts are:

at least one tubular part having a female square thread formed therein; and

at least one root having a male square thread formed thereon.

7. A deep hole cutter as claimed in Claim 6, wherein the tubular part is fitted with an insert in the bottom thereof to fill the space inside the unthreaded bottom portion thereof so that one end of the root can be in close contact with the insert.

8. A deep hole cutter as claimed in any one of Claims 1 - 5, wherein the front connecting part of the tool shank includes a circumferential stage and a key both formed thereon, and wherein the rear connecting part of the cutting head has a circumferential groove and a key groove both formed therein;

the circumferential stage and groove being engageable with each other so as to prevent the tool shank and the cutting head from moving axially relative to each other;

the key and the key groove being engageable with each other so as to prevent the tool shank and the cutting head from rotating relative to each other.